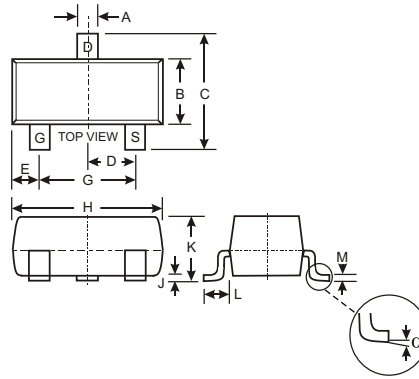


Features

- Low On-Resistance: $R_{DS(ON)}$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Lead Free/RoHS Compliant (Note 2)**

Mechanical Data

- Case: SOT-23
- Case Material: UL Flammability Classification Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Terminal Connections: See Diagram
- Marking (See Page 2): K7B
- Ordering & Date Code Information: See Page 2
- Weight: 0.008 grams (approx.)



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
	0	8
All Dimensions in mm		

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V_{DSS}	60	V
Drain-Gate Voltage $R_{GS} = 1.0M$	V_{DGR}	60	V
Gate-Source Voltage	V_{GSS}	± 20 ± 40	V
Drain Current	I_D	240	mA
Total Power Dissipation (Note 1)	P_d	300	mW
Thermal Resistance, Junction to Ambient	R_{JA}	417	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_j, T_{STG}	-55 to +150	$^\circ\text{C}$

- Note: 1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
 2. No purposefully added lead.

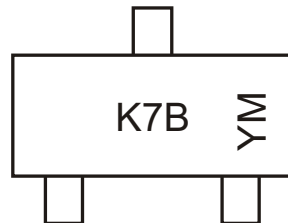
Electrical Characteristics @ T_A = 25 °C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 3)						
Drain-Source Breakdown Voltage	BV _{DSS}	60	70		V	V _{GS} = 0V, I _D = 10 A
Zero Gate Voltage Drain Current	I _{DSS}			1.0 500	μA	V _{DS} = 60V, V _{GS} = 0V @ T _C = 25°C @ T _C = 125°C
Gate-Body Leakage	I _{GSS}			±10	nA	V _{GS} = ±15V, V _{DS} = 0V
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	1.0		2.5	V	V _{DS} = V _{GS} , I _D = 250 A
Static Drain-Source On-Resistance	R _{DS(ON)}		1.6 2.0	3 4		V _{GS} = 10V, I _D = 250mA V _{GS} = 4.5V, I _D = 200mA @ T _J = 25°C
On-State Drain Current	I _{D(ON)}	0.8	1.0		A	V _{GS} = 10V, V _{DS} = 7.5V
Forward Transconductance	g _{FS}	80			mS	V _{DS} = 10V, I _D = 0.2A
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{iss}		22	50	pF	V _{DS} = 25V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}		11	25	pF	
Reverse Transfer Capacitance	C _{rss}		2.0	5.0	pF	
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{D(ON)}		7.0	20	ns	V _{DD} = 30V, I _D = 0.2A, R _L = 150 Ω, V _{GEN} = 10V, R _{GEN} = 25 Ω
Turn-Off Delay Time	t _{D(OFF)}		11	20	ns	

Ordering Information (Note 4)

Device	Packaging	Shipping
2N7002E-7-F	SOT-23	3000/Tape & Reel

- Notes:
3. Short duration test pulse used to minimize self-heating effect.
 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information


K7B = Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: P = 2003
 M = Month ex: 9 = September

Date Code Key

Year	2003	2004	2005	2006	2007	2008	2009
Code	P	R	S	T	U	V	W

Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

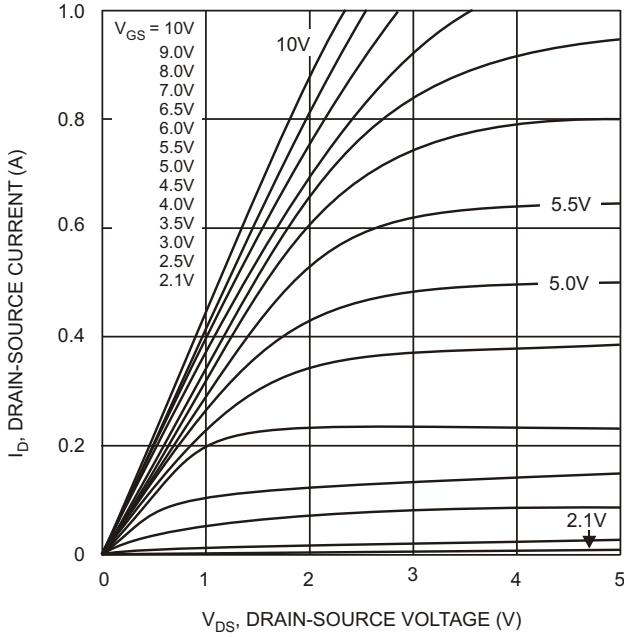


Fig. 1 On-Region Characteristics

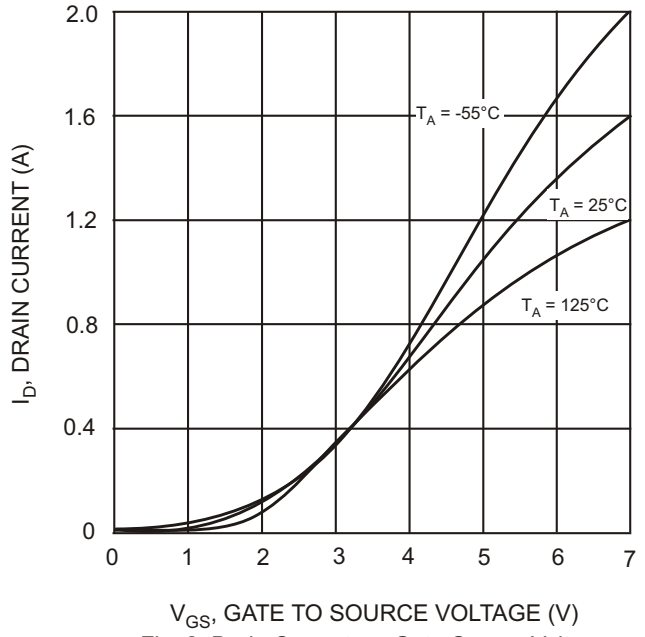


Fig. 2 Drain Current vs. Gate-Source Voltage

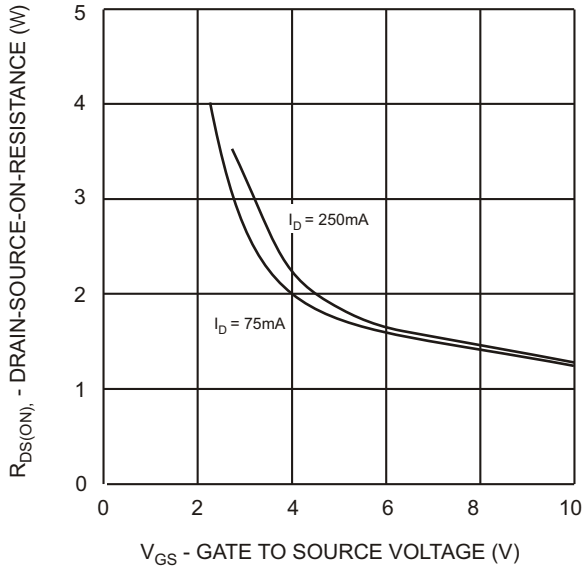


Fig. 3 On Resistance vs. Gate to Source Voltage

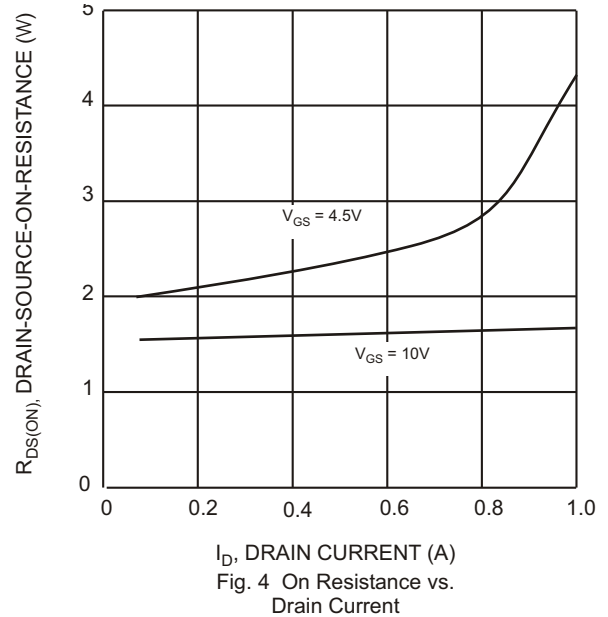


Fig. 4 On Resistance vs. Drain Current

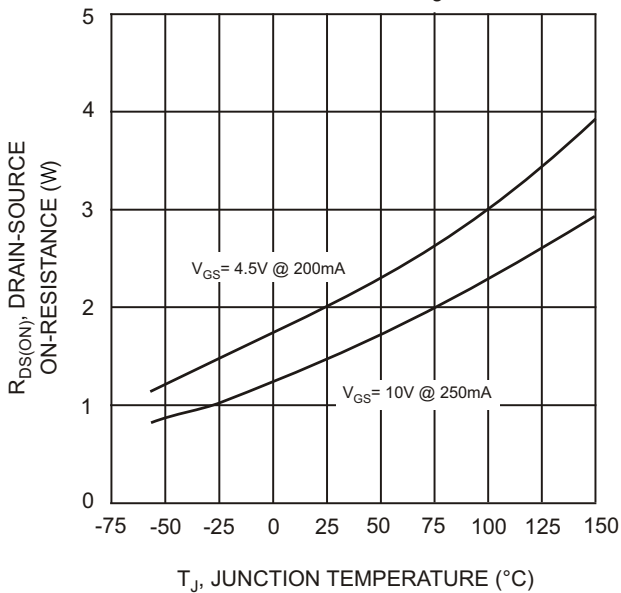


Fig. 5 On-Resistance vs. Junction Temperature

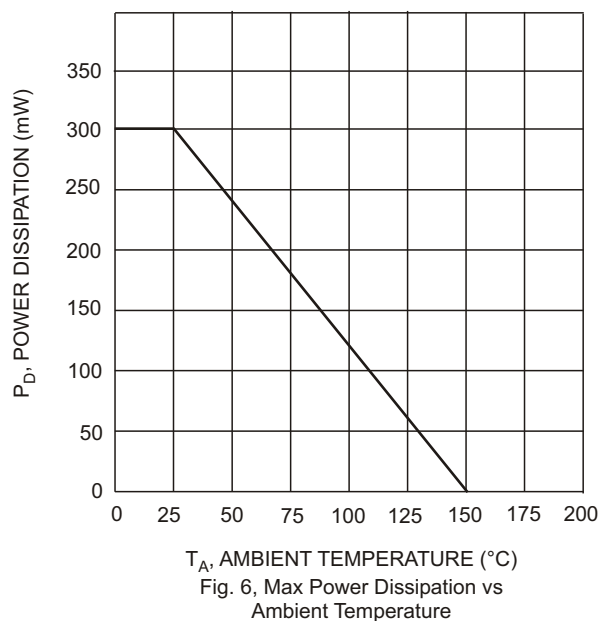


Fig. 6, Max Power Dissipation vs Ambient Temperature

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